

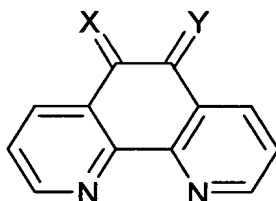
## **Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

### **Listing of Claims:**

Claim 1 (currently amended) A single use disposable electrode strip for attachment to the signal readout circuitry of a sensor system to detect a current representative of an analyte in an aqueous sample, the strip comprising:

- a) an elongated support having a substantially flat planar surface, adapted for releasable attachment to said readout circuitry;
- b) a first conductor extending along said surface and comprising a conductive element for connection to said readout circuitry;  
an active electrode on said surface in contact with said first conductor, said active electrode comprising a nicotinamide co-factor-dependent enzyme, a nicotinamide cofactor, and a mediator consisting of a compound having the following formula:



where X and Y are independently [be] oxygen, sulphur,  $\text{CR}^3\text{R}^4$ ,  $\text{NR}^3$ , or  $\text{NR}^3\text{R}^4$  or the functional group  $\text{CZ}^1\text{Z}^2$ , where  $\text{Z}^1$  and  $\text{Z}^2$  are electron withdrawing groups; and  $\text{R}^3$  and  $\text{R}^4$  are independently a hydrogen atom, a hydroxyl group or a substituted or unsubstituted alkyl, aryl, heteroaryl, amino, alkoxy, or aryloxy group, wherein said active electrode is formulated with filler and binder ingredients;

- c) a second conductor extending along said surface, comprising a conductive element for connection to said readout circuitry;
- d) a reference/counter electrode in contact with said second conductor;

e) said conductors being spaced apart so as not to be in electrical contact and being configured so as not to be brought into electrical contact when said aqueous sample is placed on said strip;

f) said active electrode and said reference/counter electrode being configured so that both may be simultaneously covered by a small drop of said aqueous sample to provide an electrical conduction path between said electrodes.

Claim 2 (original) The electrode strip of claim 1 wherein the mediator compound is 1,10-phenanthroline quinone.

Claim 3 (previously presented) The electrode strip of claim 1 wherein the co-factor dependent enzyme is glucose dehydrogenase.

Claim 4 (previously presented) The electrode strip of claim 1 wherein the co-factor dependent enzyme is hydroxybutyrate dehydrogenase.

Claim 5 (previously presented) A process of measuring the concentration in an aqueous sample of an analyte subject to oxidation by a ~~NAD(P)<sup>-</sup> dependent~~ NAD(P)<sup>+</sup> dependent enzyme comprising the steps of:

a) providing the electrode strip of claim 1;

b) oxidizing the analyte with the ~~NAD(P)<sup>-</sup> dependent~~ NAD(P)<sup>+</sup> dependent enzyme in the presence of ~~NAD(P)<sup>-</sup>~~ NAD(P)<sup>+</sup>; oxidizing the NAD(P)H generated by reaction with the analyte and ~~NAD(P)<sup>-</sup> dependent~~ NAD(P)<sup>+</sup> dependent enzyme with the mediator compound of step a); and

c) applying an electrical potential at an electrode to reoxidize the mediator compound reduced in oxidizing NAD(P)H and observing the resultant current,

wherein some of the mediator compound is being reduced by reaction with NAD(P)H while some of the mediator compound is being oxidized by transfer of electrons to said electrode during a measurement period and the rate of oxidation of the mediator compound over said

measurement period and consequently the resultant observed current is monotonically related to the concentration of analyte in the sample.

Claim 6 (original) The process of claim 5 wherein the ~~NAD(P)<sup>-</sup> dependent~~ NAD(P)<sup>+</sup> dependent enzyme, ~~NAD(P)<sup>-</sup>~~ NAD(P)<sup>+</sup>, and mediator compound have been applied to the surface of said electrode in combination with a binder and a filler.

Claim 7 (previously presented) The process of claim 6 wherein the current observed during the measurement period is linearly related to the concentration of the analyte in the sample.

Claim 8 (original) The process of claim 5 wherein the mediator is 1,10-phenanthroline quinone.

Claim 9 (previously presented) The process of claim 5 wherein the co-factor-dependent enzyme is glucose dehydrogenase.

Claim 10 (previously presented) The process of claim 8 wherein the co-factor dependent enzyme is hydroxybutyrate dehydrogenase.

Claim 11 (original) The process of claim 5 wherein the applied potential is 200 mV or less.

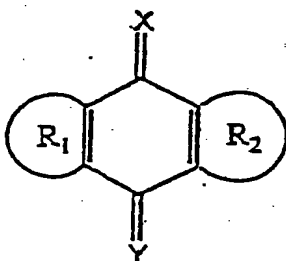
Claim 16 (canceled)

Claim 17 (canceled)

Claim 18 (currently amended) A single use disposable electrode strip for attachment to the signal readout circuitry of a sensor system to detect a current representative of an analyte in an aqueous sample, the strip comprising:

a) an elongated support having a substantially flat planar surface, adapted for releasable attachment to said readout circuitry;

b) a first conductor extending along said surface and comprising a conductive element for connection to said readout circuitry;  
 an active electrode on said surface in contact with said first conductor, said active electrode comprising a nicotinamide co-factor-dependent enzyme, a nicotinamide cofactor, and a mediator consisting of a compound having the following formula:



where X and Y are independently ~~[be]~~ oxygen, sulphur,  $CR^3R^4$ ,  $NR^3$ , or  $NR^3R^4$  or the functional group  $CZ^1Z^2$ , where  $Z^1$  and  $Z^2$  are electron withdrawing groups;  $R_1$  and  $R_2$  are independently ~~an unsubstituted aromatic or heteroaromatic group~~ groups; and  $R^3$  and  $R^4$  are independently ~~[be]~~ a hydrogen atom, a hydroxyl group or a substituted or unsubstituted alkyl, aryl, heteroaryl, amino, alkoxy, or aryloxy group, wherein said active electrode is formulated with filler and binder ingredients;

- c) a second conductor extending along said surface, comprising a conductive element for connection to said readout circuitry;
- d) a reference/counter electrode in contact with said second conductor;
- e) said conductors being spaced apart so as not to be in electrical contact and being configured so as not to be brought into electrical contact when said aqueous sample is placed on said strip;
- f) said active electrode and said reference/counter electrode being configured so that both may be simultaneously covered by a small drop of said aqueous sample to provide an electrical conduction path between said electrodes.

Claim 19 (canceled)

Claim 20 (previously presented) The electrode strip of claim 18 wherein the co-factor dependent enzyme is glucose dehydrogenase.

Claim 21 (previously presented) The electrode strip of claim 18

wherein the co-factor dependent enzyme is hydroxybutyrate dehydrogenase.

Claim 22 (previously presented) The electrode strip of claim 18 wherein said  $R_1$  or said  $R_2$  or both said  $R_1$  and said  $R_2$  is substituted with at least one alkyl group.

Claim 23 (previously presented) The electrode strip of claim 18 wherein said  $R_1$  or said  $R_2$  or both said  $R_1$  and said  $R_2$  are unsubstituted.

Claim 24 (previously presented) A process of measuring the concentration in an aqueous sample of an analyte subject to oxidation by a  $\text{NAD(P)}^+$  dependent enzyme comprising the steps of:

- a) providing the electrode strip of claim 18;
- b) oxidizing the analyte with the  $\text{NAD(P)}^+$  dependent enzyme in the presence of  $\text{NAD(P)}^+$ ; oxidizing the  $\text{NAD(P)H}$  generated by reaction with the analyte and  ~~$\text{NAD(P)}$ -dependent~~  $\text{NAD(P)}^+$  dependent enzyme with the mediator compound of step a); and
- c) applying an electrical potential at an electrode to reoxidize the mediator compound reduced in oxidizing  $\text{NAD(P)H}$  and observing the resultant current, wherein some of the mediator compound is being reduced by reaction with  $\text{NAD(P)H}$  while some of the mediator compound is being oxidized by transfer of electrons to said electrode during a measurement period and the rate of oxidation of the mediator compound over said measurement period and consequently the resultant observed current is monotonically related to the concentration of analyte in the sample.

Claim 25 (previously presented) The process of claim 24 wherein the current observed during the measurement period is linearly related to the concentration of the analyte in the sample.

Claim 26 (cancelled)

Claim 27 (previously presented) The process of claim 24 wherein the co-factor dependent enzyme is glucose dehydrogenase.

Claim 28 (previously presented) The process of claim 24 wherein the co-factor dependent enzyme is hydroxybutyrate dehydrogenase.

Claim 29 (previously presented) The process of claim 24 wherein the applied potential is 200 mV or less.

Please cancel claims 16, 17, 19, and 26.